

Amendments to the Claims:

1. (Currently amended) A process of controlling expression of a plastome-encoded sequence of interest in a plant or in plant cells, comprising externally applying to said plant or to said plant cells a control signal selected from the group consisting of lactose or an analog of lactose, wherein said plant or said plant cells contain in the plastid genome a recombinant nucleic acid comprising said sequence of interest and, operably linked thereto, a lac operator, said plant or said plant cells further having or encoding an intra-plastid lac repressor.

(a) ~~— a physical signal and~~

(b) ~~— a chemical signal or a source thereof,~~

~~— wherein said control signal is adapted for an interaction of said physical or said chemical signal with an intra-plastid component of the plastid protein expression machinery and wherein expression of said sequence of interest is controlled by said interaction.~~

Claims 2-25. (Cancelled)

26. (Previously Presented) The process according to claim 1, wherein said controlling is inducing expression of said sequence of interest.

27. (Previously Presented) The process according to claim 1, wherein said controlling is suppressing expression of said sequence of interest.

28. (Previously Presented) The process according to claim 1, wherein said process is carried out on an intact plant or after harvesting said plant or said plant cells.

Claims 29-35. (Cancelled)

36. (Currently amended) Plant or plant cells capable of controlled expression of a plastome-encoded sequence of interest, said plant or plant cells comprising in the plastid genome a recombinant nucleic acid comprising said sequence of interest operably linked to a lac operator, said plant or said plant cells further having or encoding an intra-plastid lac repressor, ~~or encoding a heterologous intra-plastid component of the plastid protein expression machinery, said component being adapted for interacting with an externally provided chemical or physical signal such that expression of said sequence of interest can be controlled by said interaction.~~

Claims 37-40. (Cancelled)

41. (Currently amended) A process of producing a plant or plant cells transformed ~~on~~ in their plastid genome with a sequence of interest, comprising transforming a plant or plant cells on their plastome with said sequence of interest operably linked to a lac operator and with a heterologous nucleotide sequence encoding an intra-plastid lac repressor, ~~and a heterologous nucleotide sequence being or encoding an intra-plastid component of the plastid protein expression machinery, whereby said intra-plastid component is adapted for interacting with an externally provided chemical or physical signal.~~

42. (Currently amended) A system for controlling expression of a sequence of interest in a transplastomic plant or in transplastomic plant cells, comprising:

(a) a plant or plant cells capable of controlled expression of a plastome-encoded sequence of interest, said plant or plant cells comprising in the plastid genome a recombinant nucleic acid comprising said sequence of interest operably linked to a lac operator, said plant or said plant cells further having or encoding an intra-plastid lac repressor; and

(b) lactose or an analog of lactose for controlling expression of said sequence of interest in said plant or plant cells.

~~the plant or plant cells according to claim 36 and a chemical or physical control signal capable of entering into plastids when applied externally, said control signal being adapted for controlling~~

~~expression of said sequence of interest in said plant or plant cells by interacting with said intra-plastid component.~~

43. (New) The process according to claim 1, wherein said lac repressor is encoded by said recombinant nucleic acid or by a further recombinant nucleic acid integrated into said plastid genome.

44. (New) The process according to claim 1, wherein said lactose analog is isopropyl thiogalactopyranoside (IPTG).

45. (New) The plant or plant cells according to claim 36, wherein said lac repressor is encoded by a heterologous nucleotide sequence transformed into plastids of said plant or said plant cells.

46. (New) The plant or plant cells according to claim 36, wherein said lac repressor is constitutively expressed in said plant or said plant cells.

47. (New) The system according to claim 42, wherein said lactose analog is isopropyl thiogalactopyranoside (IPTG).